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ABSTRACT

This document constitutes the final report of efforts undertaken in regard to grant N00014-89J-3172. In this program, students from the MAST Academy and other public and private high schools in Dade County were placed in laboratory positions at three oceanographic institutions on Virginia Key, Miami, Florida during the summer of 1993. These students received direct supervision from faculty members of the Rosenstiel School of Marine and Atmospheric Science (RSMAS) and from staff scientists at the Atlantic Oceanographic and Meteorological Laboratories of the National Oceanic and Atmospheric Administration (AOML/NOAA) and at the Southeast Fisheries Center, National Marine Fisheries Service (SEFC/NMFS). This program enabled high school students the opportunity to work in a marine science research environment and to more accurately appraise career opportunities in oceanographic sciences.

This document constitutes the Final Report of efforts undertaken under:

Grant No. N00014-89-J-3172/P00003
R&T Project: 4231042--04

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UNIVERSITY OF Miami

April 13, 1994

Dr. Bernard Zahuranec
Scientific Officer
Department of the Navy
Office of Naval Research
800 N. Quincy Street
Arlington VA 22217-5000

Dear Sir:

We are enclosing our progress report (3 copies) of work performed under Agreement No. 00014-89J-3172 reference "Partial Support of MAST Academy Outreach Program". We are forwarding one copy to the administrative officer of ONR in Atlanta, one copy to the Director of NRL and twelve copies to DTIC.

Sincerely,

Bruce R. Rosendahl

Bruce R. Rosendahl
Dean & Weeks Chair

ENCLOSURES

Rosenstiel School of Marine and Atmospheric Science
Office of the Dean
4600 Rickenbacker Causeway
Miami, Florida 33149-1098
(305) 361-4000
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GRANT PURPOSE

The purpose of this grant was to provide funding to conduct a high-school intern program jointly with the Dade County Public Schools. This program was supported by both the National Oceanic and Atmospheric Administration and the Navy. The conduct of the program, the personnel and effort, and the use of funds for direct and indirect expenses were generally as set forth in the Grantees' proposal entitled, "Partial Support of MAST Academy Outreach Program" dated May 25, 1993. Eligibility for this program was limited to Dade County high school students who meet the following criteria:

- o Entering grades 11 or 12.
- o Possess a minimum overall grade point average of 2.5 (acceptable), and 3.0 for scientific and laboratory research jobs.
- o Possess a good attendance record.
- o Successful completion of one or more of these courses: Biology, Marine Biology, Ecology, Chemistry, Physics, Computer Applications.
- o Recommended as a high achiever and hard worker who possesses a positive attitude. The student must be self-directed and able to work independently, if necessary. The student must be punctual and dependable.
- o Provide their own daily transportation.
- o Completed the application and interview process.

EXECUTION OF THE PROGRAM

Faculty at the Rosenstiel School and scientists at the NOAA/AOML and SEFC/NMFS laboratories, especially those who had participated in previous summer intern programs, were sent a request for summer positions and asked to fill out a job description form. The completed forms were then sent to the MAST Academy, where the student applicants' skills were matched with specific job descriptions (i.e., those with computer and math skills were matched with a job in scientific data processing). Copies of the job descriptions are given in Appendix A. Faculty and scientists at the three labs were then contacted and interviews with the student applicants arranged. The final list of students and supervising faculty is given in Appendix B. The program encompassed the period from July 2 through August 20, 1993.

These summer internships were paid positions and were available at three federally supported oceanographic centers. They are:

- o University of Miami, Rosenstiel School of Marine and Atmospheric Science
- o National Oceanic and Atmospheric Administration, Atlantic Oceanographic and Meteorological Laboratories.
- o National Marine Fisheries Service, Southeast Fisheries Center.

The terms of employment and opportunities in this program were as follows:

- o A maximum of fifteen summer internships were available through an application and interview process
- o Employment period was from July 2 through August 20, 1993.
- o One annual elective high school credit was earned.
- o Each student earned $4.75 per hour for a 7.5 hour day and worked a total of 35 working days.

In addition this past year, for the first time, the program included the opportunity for up to five students to continue their internships durin g the fall semester. Three students chose this option and continued in their lab positions during after-school hours, on weekends and during holidays. This portion of the project was funded with residual funds from previous years support.

The 1993 timetable for this program was as follows:

May 7	Faculty position requests and job descriptions due in Dean's Office/RSMAS. UM administration of program carried out through this office. Job descriptions sent to MAST Academy program administrator.
May 7	Student applications due in MAST office.
May 10-14	Applications checked for completeness by MAST staff.
May 17-21	Potential employers called and interviews scheduled. Faculty and scientist mentors called and interviews scheduled.
May 24- June 4	Applicant interviews at job sites based on criteria stated on applications.
June 7-18	Mentors notify MAST of applicant decisions.
June 18-30	Students are notified of placement. MAST orientation for students with emphasis on job skills.
July 2	Students report to Dean's Office/RSMAS for orientation and a tour of the Rosenstiel School and to complete paperwork related to hiring.
July 6 - August 20	Students report to the job site Monday through Friday (or as arranged with mentor).
August 21-31	Students make up missed days of work to complete 35-day assignment.
Sept - Dec	Fall interns continue working afterschool/weekends

The program administrator for the summer internship program at the MAST Academy conducted a post-internship survey to assist the University in both the preparation of this final report and in order to properly evaluate the effectiveness of this program (see Appendix C). The program was assessed in terms of its impact on participating students in the following areas:

- Subsequent career choice.
- Mentor contact.
- Job opportunities and employability.
- Academic standing and choice of curriculum.
- Environmental awareness.

As is shown by the preliminary results, a large proportion of the interns report a positive influence on their high school grades after the internship. This has been the most consistent result of this program; in fact several of the interns from each summer program, throughout the nine years of this program, have decided that science is the career they want and made plans to attend either the University of Miami Undergraduate Marine Science or Environmental Sciences Program, or a similar program at another university or college.

Many of the interns, especially those who found the summer intern experience stimulating or enriching, are taking or plan on taking advanced science courses including advanced placement biology, chemistry and physics. Those who do not plan on taking advanced science courses generally fall into three categories: those who find that science is "harder" than they expected and seem daunted by the amount of work involved in both studies and actual research; those who find it less interesting than expected (a very small proportion of the respondents); and those who do not have these types of courses available at the school they presently attend.

The role of the mentor has proven to be pivotal in the experience of the students; the goal of the program is not only exposure to laboratory techniques but to those marine scientists who are willing to serve as active role models for these students. There are several scientists who have shown a special willingness to train and educate by example and who open their research activities for these summer interns each year. The students cite these mentors' accessibility and patience and their willingness to communicate about the research being done as the most positive aspect of this student-mentor relationship. Another very positive aspect of the student-mentor relationship occured when young women served their internship with a woman scientist or the Hispanic students had contact with Hispanic scientists. The student-mentor relationship is further enhanced by regular communication with the MAST staff coordinator who monitors progress of skill development, interpersonal relationships and work skills.

In past years we have made note of the continued contact between students and mentors after the summer internship has ended. It is usually these interns (who maintain contact with their mentors) who return for a second summer in the program. Because this contact has been such a consistently positive result of intern program, this year there was the additional option to continue an internship into the fall semester. Not only did the students benefit from additional training and skill development during these additional months, but

the mentors were able to have better trained individuals working in their labs. The time the mentors spent training an intern thus gave them a greater return on their investment of time, with the option to prolong the internship into the fall months.

In all cases where the administrators of the program have had personal communication with the student interns, there is a sense of excitement and interest in the sciences. More and more of the interns are entering and winning local (county) science fair awards; several of the interns have gone on to the state competition. The highest proportion of interns who choose science as their intended major in college have participated in the intern program a second year or chose to continue their internship in the fall semester. The mentoring process can thus be said to have a direct connection to subsequent career and academic choices.

This intern program was initially created primarily to provide disadvantaged or minority high school students with the opportunity for direct science research experience as a means of stimulating interest in the science. At this point it is specifically aimed at high school students to serve as an academic stimulus in the pre-college years. A perusal of the data gathered in the nine years of this program supports the yearly evaluation that this approach is effective in achieving its programmatic goals. A substantial proportion of the students not only benefit academically from their participation, but are exposed to a more realistic experience of what a marine science career entails, including the physical requirements of laboratory and oceanographic research. The interns who work at the Rosenstiel School are also exposed to the academic environment in a direct way through their contact with graduate students and professors. Through this contact, the high school interns have a more realistic sense of the length of studies and level of expertise required for a career in marine science. Lastly, by providing this educational stimulus to students from ethnic, social or economic backgrounds that are under-represented in the field of science (black, female and Hispanic) this program fulfills a national mandate to promote increased academic excellence in math and the sciences among American youth, as well as providing more opportunities to minority and disadvantaged youth.

In the early years of the program the intent was to provide opportunities for inner city youth in marine sciences and was administered jointly with the Dade County Public School System as the "Inner City Marine Program". This partnership formed between Dade County Public Schools and the University of Miami is one of the most important aspects of this program -- for it benefits both students and the community, especially disadvantaged or minority students, by effective coordination of local educational resources. Though the focus of the program has shifted in the past three years from being primarily for inner city youth, the program still serves to attract a large percentage of black and Hispanic students (at least 50% of the interns), thus continuing to provide this much-needed opportunity to those economically disadvantaged. It is another indication

of the success of the program that career opportunity and job eligibility have been inproved for these students.

This program had such continued success in achieving its goals that it was incorporated into the curriculum of the newly formed MAST Academy (a marine science and technology high school) as a summer intern program. The focus has evolved through the years to include a stronger emphasis on academic excellence and exposure to oceanographic science (though it still serves its original purpose as an outreach opportunity for disadvantaged youth, accepting applicants from public and private high school students in Dade and Broward County).

Students at the MAST Academy are fortunate to have a greater exposure to the many and varied branches of marine science and better training in basic laboratory techniques than most high school students, but many of the students who apply to this program do not have such an advanced science curriculum in their school. This program has been very effective, therefore, in identifying local students with a predilection for science and giving them the opportunity to experience many of the possibilities that exist in the oceanographic community for various types of research. The summer internships thus serve as an extension of the high school experience, opening up many previously unknown academic and career possibilities to those students who have already proven they are capable of achieving academic excellence and realization of their goals.

Another positive result of the program is a greater environmental awareness on the part of these students. The exposure to scientists in general, and oceanographic scientists in particular, allows the students to explore specific aspects of the marine ecosystem not usually experienced in high school, among them an awareness of the actual effects of development on the environment. By working in a coral reef laboratory, or with phytoplankton samples, or assessing data on coastal properties, these students gain specific knowledge of the natural world, the negative effects of urban development and the polluting factors associated with it (e.g., raw sewage spills in local waters). A consistent result of the summer internships seems to be a heightened awareness of some of the local environmental problems that exist. A secondary effect of this increased awareness may be career or academic choices related to the fields of ecology, environmental law, or marine and coastal policy.

This program has also been a success in providing experiences that improve job eligibility. Follow-up contact with former summer interns has shown that not only do many of these students feel more qualified to pursue jobs within the oceanographic and science community, they actually have gained some of the needed skills to perform well at these jobs. Several of the former interns are currently employed at the University or at the NOAA/AOML laboratory. We credit this program with providing these students with necessary research skills and an understanding of new procedures. Indeed, many of the mentors note a

maturation process in these high school students when exposed to graduate students, researchers and staff members during their internship.

It is important to note that after ten years duration this program and its continued success have become an incentive for middle school students as a known reward for academic excellence in the maths and sciences. Students can look forward to participating in this program in their junior and senior years, thus gaining a competitive academic edge during the final years of high school (for as noted above, student participation in this program has been shown to improve grades and laboratory skills and thus improve a student's chances of being accepted by the college program of their choice). This program has, in part because of its long term duration, become an important part of the improved science curriculum in the Dade County Public School system. In fact, its continued success at stimulating student interest in the sciences has indirectly led to the initiation of similar programs in other academic areas.

APPENDIX A

JOB DESCRIPTIONS

FOR

MAST ACADEMY OUTREACH PROGRAM

SUMMER MARINE AND ENVIRONMENTAL SCIENCE
INTERNSHIP PROGRAM

July 2 through August 20, 1993

MARITIME EMPLOYMENT PROGRAM

JOB DESCRIPTION

MAST Academy
3979 Rickenbacker Causeway
Virginia Key, Florida 33149

Position Title Student Assistant Hours 25 - 40

Agency University of Miami - RSMAS

Job site address 4600 Rickenbacker Causeway, Miami, FL 33149

CIMAS Bldg., 1st fl

Immediate Supervisor Francine Leon Phone 305/361-4175 ext 0

Agency Contact Person _____ Phone _____
(If different from immediate Supervisor)

Number of positions available 1

Minimum Age 16

Special Requirements Familiar with Computers
(ie: skills, course prerequisites, etc.)

Dress Requirements Casual

JOB DESCRIPTION

Student to assist in all aspects of Oceanographic Operations-Technical Equipment Preparation, Record Keeping & Automated Filling etc

1993

MARITIME EMPLOYMENT PROGRAM

JOB DESCRIPTION

MAST Academy
3979 Rickenbacker Causeway
Virginia Key, Florida 33149

Position Title Laboratory Assistant Hours 9-5

Agency UNIVERSITY OF MIAMI

Job site address 4600 Rickenbacker Causeway

Immediate Supervisor DR. SWART Phone 361 4103

Agency Contact Person Symma Finn Phone 361 4166
(If different from immediate Supervisor)

Number of positions available 1

Minimum Age 16

Special Requirements NONE
(ie: skills, course prerequisites, etc.)

Dress Requirements lab is AC casual dress

JOB DESCRIPTION

Data entry in computers. Sampling corals, general lab work. Some field work in Florida Bay.

MARINE AND ENVIRONMENTAL SCIENCE INTERNSHIP PROGRAM

JOB DESCRIPTION 1993

MAST Academy
3979 Rickenbacker Causeway
Virginia Key, Florida 33149

Position Title Lab Assistant Hours 37.5

Agency Rosenstiel School of. Marine & Atmospheric Science

Job site address 4600 Rickenbacker Csw4
Miami, Fl.

Immediate Supervisor Doug Campbell Phone 361.4708

Agency Contact Person S FINN — Phone —
(If different from immediate Supervisor)

Number of positions available 1

Minimum Age 16

Special Requirements None
(ie: skills, course prerequisites, etc.)

Dress Requirements normal lab clothing.

JOB DESCRIPTION

Density & salinity measurements of seawater
Other lab duties as required.

1993

MARINE AND ENVIRONMENTAL SCIENCE INTERNSHIP PROGRAM

JOB DESCRIPTION

MAST Academy
3979 Rickenbacker Causeway
Virginia Key, Florida 33149

Position Title Research Assistant Hours 9 - 5

Agency RSMAS

Job site address 4600 Rickenbacker Cswy
SLA 298

Immediate Supervisor Dr. Alina Szmant Phone 361-4609

Agency Contact Person Symma Finn Phone 361-[redacted] 4016
(If different from immediate Supervisor)

Number of positions available ~~the~~ 1

Minimum Age 17

Special Requirements Biology, Chemistry, (computers)
(ie: skills, course prerequisites, etc.)

Dress Requirements Casual - shorts

JOB DESCRIPTION

Assist with research on coral physiology and with studies of nutrient effects on coral reefs and natural reefs.

1993

MARITIME EMPLOYMENT PROGRAM

JOB DESCRIPTION

MAST Academy
3979 Rickenbacker Causeway
Virginia Key, Florida 33149

Position Title Research Assistant Hours 20-40/week

Agency Rosenstiel School of Marine & Atmospheric Science (Marine Affairs)

Job site address 4600 Rickenbacker Causeway, Miami 33149

Immediate Supervisor Prof. Daniel Suman Phone 361-4085

Agency Contact Person _____ Phone _____
(If different from immediate Supervisor)

Number of positions available 1

Minimum Age 16

Special Requirements good writing and library research skills
(ie: skills, course prerequisites, etc.)

Dress Requirements casual. Formal during an occasional meeting.

JOB DESCRIPTION Research Assistant will help Daniel Suman research, write, and edit ten case studies regarding management of the South Florida marine and ~~terrestrial environment. These case studies will be used in environmental~~ studies and marine policy courses in high schools and colleges. Research assistant should be a good writer, like to conduct interviews, and have some exposure to library research. I will guide Research Assistant and guarantee that ~~he/she is engaged in an activity that is educational and enjoyable to the MAST Academy student~~.

If the Research Assistant speaks or writes Spanish, he/she could assist in ~~the organization and followup of a week-long international workshop on mangrove~~ management. The workshop is in June, but we will have to perform analysis of ~~workshop results during the remainder of the summer.~~

1993

MARITIME EMPLOYMENT PROGRAM

JOB DESCRIPTION

MAST Academy
3979 Rickenbacker Causeway
Virginia Key, Florida 33149

Position Title Student Asst Hours 9-5

Agency RSMAS

Job site address 4600 Rickenbacker Cswy
South Grosvenor rm. 264

Immediate Supervisor Dr. Ginsburg Phone 361-4875/468

Agency Contact Person S. Finn Phone
(If different from immediate Supervisor)

Number of positions available 1

Minimum Age 16

Special Requirements
(ie: skills, course prerequisites, etc.)

Dress Requirements Casual

JOB DESCRIPTION

Assist in preparation of samples for analysis; prepare maps of coral reefs; learn to use microscope for description of bottom samples.

1993

BRAND

MARITIME EMPLOYMENT PROGRAM

JOB DESCRIPTION

MAST Academy
3979 Rickenbacker Causeway
Virginia Key, Florida 33149

Position Title laboratory assistant Hours Flexible.

Agency University of Miami RSMAS

Job site address 4600 Rickenbacker Cswy
Miami Florida 33149

Immediate Supervisor Dr. Larry Brand Phone 361 4138

Agency Contact Person Juan Jaramillo Phone 361-4050
(If different from immediate Supervisor)

Number of positions available 2-3

Minimum Age 15

Special Requirements ONE science course
(ie: skills, course prerequisites, etc.)

Dress Requirements NONE (casual)

JOB DESCRIPTION

Assist in All kinds of laboratory duties such as:
- wash test tubes and culture flusks
- wash carboys and sterilize water
- set up cultures (marine microAlgae)
- conduct experiments

Continue in Fall
Interviews prior to JUNE 18

1993

MARITIME EMPLOYMENT PROGRAM

JOB DESCRIPTION

MAST Academy
3979 Rickenbacker Causeway
Virginia Key, Florida 33149

Position Title HATchery Ass't Hours 9-5

Agency RSMAS

Job site address RSMAS Fish Hatchery
Virginia Beach Drive

Immediate Supervisor CINDY O'Brien Sarah Wynne Phone 361-1236

Agency Contact Person L. CLARKE Phone 361-4703
(If different from immediate Supervisor)

Number of positions available 4

Minimum Age _____

Special Requirements Anyone who likes to fish would be
(ie: skills, course prerequisites, etc.) helpful when we

Dress Requirements CASual/swimsuits are collecting but not necessary

JOB DESCRIPTION

Help in raising fish AND CARE of adult fish for aquaculture and ecological STUDIES.

Student to continue in the fall if possible

1993

MARITIME EMPLOYMENT PROGRAM

JOB DESCRIPTION

MAST Academy
3979 Rickenbacker Causeway
Virginia Key, Florida 33149

Position Title DATA Processing Assistant Hours Summer 40 hrs/wk 9-5 During Sch PART Time

Agency RSMAS

Job site address Meteorology & Physical Oceanography RSMA
4600 Rickenbacker Cswy, Miami, FL 33155

Immediate Supervisor Elizabeth Williams Phone 361-4070

Agency Contact Person _____ Phone _____
(If different from immediate Supervisor)

Number of positions available 1

Minimum Age 16

Special Requirements Algebra, Computer Skills
(ie: skills, course prerequisites, etc.)

Dress Requirements Neat, casual dress

JOB DESCRIPTION

This position is one where the main task will be data processing, however this will not be the only task required. This position requires flexibility as the individual will be, at various points, running computer programs, doing investigative research tasks, helping prepare instruments for deployment in the field, analyzing data, and preparing data reports. A good grasp of ALGEBRA will be helpful in some of these tasks. The person in this position need not be a computer expert, but should be willing to become one. This position may include (over

1993

MARITIME EMPLOYMENT PROGRAM

JOB DESCRIPTION

MAST Academy
3979 Rickenbacker Causeway
Virginia Key, Florida 33149

Position Title Office/Research Assistant **Hours** 75 bi-weekly

Agency University of Miami-RSMAS, Ctr. for Marine & Environmental Analyses

Job site address 4600 Rickenbacker Cswy., Miami, FL 33149-1098

Immediate Supervisor Dr. Mark Harwell, Chris Harwell or Mel Bethel **Phone** 361-4163

Agency Contact Person Symma Finn **Phone** _____
(If different from immediate Supervisor)

Number of positions available 2

Minimum Age 16

Special Requirements familiarity with library; good organizational skills;
(ie: skills, course prerequisites, etc.) some knowledge of PCs (Mac pref)

Dress Requirements none

JOB DESCRIPTION

General office work and library research in support of environmental policy unit, and the Center for Marine and Environmental Analyses

1993

MARITIME EMPLOYMENT PROGRAM

JOB DESCRIPTION

MAST Academy
3979 Rickenbacker Causeway
Virginia Key, Florida 33149

Position Title Development Assistant Hours 9-4

Agency Rosenstiel School

Job site address 4600 Rickenbacker Cswy

Immediate Supervisor Victoria Myers Phone 361-4013

Agency Contact Person _____ Phone _____
(If different from immediate Supervisor)

Number of positions available 1

Minimum Age 15

Special Requirements Proficient writer, ability to communicate and interact
(ie: skills, course prerequisites, etc.) with a variety of people,

Dress Requirements Office Attire

JOB DESCRIPTION Knowledge of personal computer

Work with the Development and Public Relations Staff to coordinate events, prepare newsletter articles, write acknowledgment letters, conduct tours of campus and prepare presentations

APPENDIX B

LIST OF STUDENT INTERNS AND MENTORS

FOR

MAST ACADEMY OUTREACH PROGRAM

SUMMER MARINE AND ENVIRONMENTAL SCIENCE
INTERNSHIP PROGRAM

July 2 through August 20, 1993

SUMMER INTERNSHIPS 1993
CLASS ROSTER

(updated 6/29/93)

NAME	LOCATION	SS NUMBER	AGE
Aguilar, Tatiana	RSMAS	591-58-9755	15
Bendezu, Jean	RSMAS	591-52-5479	16
Cuza, Janine	NOAA	589-46-6845	16
Diaz, Johnathan	RSMAS	298-744119	15
Doig, Annie	RSMAS	592-70-2303	15
Engler, Craig	~~SEFC~~ NOAA	594-58-3532	17
Garcia, Nicole	RSMAS	593-42-1018	15
Graff, Sarah	SEFC	594-70-9961	17
Hudgins, Sherry	RSMAS	595-60-7558	15
Lopez, Rick	RSMAS	304-82-4115	17
Mark, Jacqueline	RSMAS	593-70-7968	16
Matas-Sosa, Orlando	~~NOAA~~ SEFC	592-66-7679	16
Munoz, Hazzen	RSMAS	590-50-9395	16
Neudorff, Sheree	RSMAS	591-30-1946	15
Pupo, Jorge	RSMAS	595-40-2334	16
Rice, Brian	RSMAS	589-50-2801	17
Rodriguiz, Miriam	SEFC	263-89-4479	17
Seidle, Beth	RSMAS	589-21-9518	16
Steele, Ian	NOAA	589-80-7819	16
Vlad, Ann	NOAA	591-09-5099	16
Whitling, David	RSMAS	265-97-1382	16
Williams, Fred III	RSMAS	590-70-7534	17

* second year in program

A = New Intake Also Application
B = Renewal

Under 16 Application Form

RSMAS 4600 RICKEN- BACKER CSWY. MIAMI, FL. 33149	OFFICE/ RESEARCH ASST.	75 BIWEEKLY	MEL BETHEL 361-4163 CIMAS 215	DR. MARK HARWELL CHRIS HARWELL 361-4163	FAMILIARITY WITH LIBRARY;GOOD ORGANIZATIONAL SKILLS; SOME KNOWLEDGE OF PC'S (MAC PREFERRED)	NONE	GENERAL OFFICE WORK AND LIBRARY RESEARCH IN SUPPORT OF ENVIRONMENTAL POLICY UNIT, AND THE CENTER FOR MARINE AND ENVIRONMENTAL ANALYSIS	2	16	JOANNA BUENO SHERRY HUDGENS
RSMAS 4600 RICKEN- BACKER CSWY. MIAMI, FL. 33149	DEVELOPMENT ASSISTANT	9AM-4PM	VICTORIA MYERS 361-4013 S/A 105B	SYMMA FINN 361-4016	PROFICIENT WRITER, ABILITY TO COMMUNICATE AND INTERACT WITH A VARIETY OF PEOPLE, KNOWLEDGE OF PERSONAL COMPUTERS	OFFICE ATTIRE	WORK WITH THE DEVELOPMENT AND PUBLIC RELATIONS STAFF TO COORDINATE EVENTS, PREPARE NEWSLETTER ARTICLES, WRITE ACKNOWLEDGEMENT LETTERS, CONDUCT TOURS OF CAMPUS AND PREPARE PRESENTATIONS	1	15	ANNIE DOIG
NOAA/AOML 4301 RICKEN- BACKER CSWY. MIAMI, FL 33149	MARINE SCIENCE LIBRARY TECH	7.30AM- 4PM OR 8AM- 4 30PM	LINDA PIKULA 361-4429	CMDR. VIRGINIA NEWELL 361-4306	BASIC KNOWLEDGE OF LIBRARIES AND COMPUTERS		PROCESSES AND FILES NEW BOOKS AND JOURNALS; SEARCHES IN COMPUTER DATA BASES;ASSISTS LIBRARIAN	1	16	JANINE CUZA
NOAA/AOML 4301 RICKEN- BACKER CSWY. MIAMI, FL 33149	RESEARCH APPRENTICE	8AM-5PM	GEORGE MAUL 361-4343	CMDR. VIRGINIA NEWELL 361-4306	COMPUTER SKILLS	CASUAL	CREATE NEW DATA BASE OF SEA LEVEL VARIABILITY IN GULF OF MEXICO, CARIBBEAN SEA, BAHAMAS AND GUIANAS USING COMPUTER RECORDS AT AOML. STUDENT WILL HAVE TO READ FILES, COMPUTE TRENDS, COMPUTE MONTHLY MEANS, AND DRAW MAPS OF SEA LEVEL ANOMOLIES	1	16	ANN VLAD
NOAA/AOML 4301 RICKEN- BACKER CSWY. MIAMI, FL 33149	SCIENTIFIC ASSISTANT	40	REYNA SABINA 361-4324		COMPUTER SKILLS		ENTER BIBLIOGRAPHIC DATA INTO A COMPLETED DATA BASE. FILING SCIENTIFIC PAPERS	1	16	ELIZABETH BECKER (NO INTERNSHIP)
NOAA/AOML 4301 RICKEN- BACKER CSWY. MIAMI, FL 33149	COMPUTER SCIENCE INTERN	8 HR/DAY FLEXIBLE		JULES CRAYNOCK 361-4331	COMPUTER PROGRAMMING, PC FAMILIARITY	NORMAL WORK- PLACE	ASSIST SENIOR SCIENTIST AND SCIENTIFIC COMPUTER PROGRAMMERS IN REDUCTION AND PROCESSING OF ENVIRONMENTAL DATA	1	16	IAN STEELE
SE FISHERIES CENTER 75 VIRGINIA BEACH DRIVE MIAMI, FL 33149	STUDENT AID	8AM- 4:30PM		ESSIE COLMAN DUFFIE 361-4237 \	STRONG SCIENCE BACKGROUND AND INTEREST IN COMPUTERS	CASUAL	WORK CLOSELY WITH THE PROFESSIONAL, TECH AND CLERICAL STAFF OF SEFC AND MIAMI LABORATORY. WORD PROCESSING, USE OF A PC, SPECIES IDENTIFICATION, COMMERCIAL FISHERIES STATISTICS, DATA BASE MGMT., DATA ENTRY, EDITING AND QUALITY CONTROL, STATUS OF FUNDS REPORT, MARINE MAMMALS OR TURTLE PROJECT LOGBOOK ASSESSMENT, ICTHYOPLANKTON SORTING	3	16	MIRIAM RODRIGUEZ SARAH GRAFF
MIAMI SEAQUARIUM 4400 RICKEN- BACKER CSWY. MIAMI, FL 33149	GEN. ANIMAL ASST.	9:30AM- 6PM	SCOT CHRISTIE 361-5705 EXT 201	JULI GERLACH 361-5705 EXT 282	INTEREST IN ANIMALS, ENJOY OUTDOORS	UNIFORMS SUPPLIED	CLEANING ANIMAL ENCLOSURES, FOOD PREPARATION, INTERACTING AND SHARING INFORMATION WITH PARK VISITORS	1	16	MIKE HUNT

Marine and Environmental Internship Program 1993
29 Positions

EMPLOYER'' ADDRESS	POSITION TITLE	HOURS	IMMEDIATE SUPERVISOR'' PHONE''	CONTACT PERSON'' PHONE	REQUIREMENTS	ATTIRE	JOB DESCRIPTION	# OF POSITIONS	MIN. AGE	STUDENTS
RSMAS 4600 RICKEN-BACKER CSWY. MIAMI, FL. 33149	RESEARCH ASSISTANT (MARINE AFFAIRS)	20-40	PROF.DANIEL SUMAN 361-4085	SYMMA FINN 361-4016	GOOD WRITING,LIBRARY RESEARCH SKILLS FLUENT IN SPANISH	CASUAL; FORMAL DURING MEETINGS	ASSIST RESEARCH,WRITING, AND EDITING OF MARINE ENVIRONMENT CASE STUDIES	1	16	HAZZEN MUNOZ
RSMAS 4600 RICKEN-BACKER CSWY. MIAMI, FL. 33149	RESEARCH ASSISTANT	9AM-5PM	DR. ALINA SZMANT 361-4609 S/A 298	SYMMA FINN 361-4016	BIOLOGY, CHEMISTRY, COMPUTERS	CASUAL	ASSIST IN CORAL PHYSIOLOGY RESEARCH	1	17	
RSMAS 4600 RICKEN-BACKER CSWY. MIAMI, FL. 33149	LAB ASSISTANT	37.5	DOUG CAMPBELL 361-4708 S/A 216	SYMMA FINN 361-4016	NONE	NORMAL LAB CLOTHING	DENSITY AND SALINITY MEASUREMENTS OF SEAWATER OTHER LAB DUTIES AS REQUIRED	1	16	JACQUELINE MARK
RSMAS 4600 RICKEN-BACKER CSWY. MIAMI, FL. 33149	LAB ASSISTANT	9AM-5PM	DR. P. SWART 361-4103 N GROSVENOR ROOM 212/352	SYMMA FINN 361-4016	NONE	CASUAL	DATA ENTRY IN COMPUTERS; SAMPLING CORALS,GENERAL LAB WORK. SOME FIELD WORK IN FLORIDA BAY.	1	16	BRIAN RICE
RSMAS 4600 RICKEN-BACKER CSWY. MIAMI, FL. 33149	STUDENT ASSISTANT	25-40	MIGUEL MCKINNEY 361-4175 EXT 7130 CIMAS BLDG, 1ST FL	SYMMA FINN 361-4016	FAMILIAR WITH COMPUTERS	CASUAL	ASSIST IN ALL ASPECTS OF OCEANOGRAPHIC OPERATIONS-TECHNICAL EQUIPMENT PREPARATION, RECORD KEEPING AND AUTOMATED FILING	1	16	TATIANA AGUILAR
RSMAS 4600 RICKEN-BACKER CSWY. MIAMI, FL. 33149	STUDENT ASSISTANT	9AM-5PM	DR. GINSBERG 361-4875 S GROSSVENOR ROOM 264	SYMMA FINN 361-4016	NONE	CASUAL	ASSIST IN PREPARATION OF SAMPLES FOR ANALYSIS, PREPARE MAPS OF CORAL REEFS, USE MICROSCOPE FOR DESCRIPTION OF BOTTOM SAMPLES	1	16	
RSMAS 4600 RICKEN-BACKER CSWY. MIAMI, FL. 33149	LAB ASSISTANT	FLEXIBLE CONTINUE IN FALL	DR. LARRY BRAND 361-4138 E GROSVENOR ROOM 110	JUAN JARAMILLO 361-4050	ONE SCIENCE COURSE	CASUAL	ASSIST IN LAB DUTIES: WASH TEST TUBES, CULTURE FLASKS,CARBOYS;STERILIZE WATER, SET UP MARINE MICROALGAE CULTURES, CONDUCT EXPERIMENTS	2	15	DAVID WHITLING NICOLE GARCIA
RSMAS FISH HATCHERY VIRGINIA BEACH DRIVE MIAMI,FL 33149	HATCHERY ASST.	9AM-5PM CONTINUE IN FALL	CINDY O'BRIEN/ SARAH WYNNE 361-1236	DR. LIZ CLARKE 361-4703	HELPFUL IF LIKES TO FISH	CASUAL/ SWIMSUIT	HELP IN RAISING FISH AND CARE OF ADULT FISH FOR AQUACULTURE AND ECOLOGICAL STUDIES	3	16	JOHN BENDEZU JORGE PUPO
RSMAS 4600 RICKEN-BACKER CSWY. MIAMI, FL. 33149	DATA PROCESSING ASST.	9AM-5PM CONTINUE IN FALL	ELIZABETH WILLIAMS 361-4070 MSC 315	TOM LEE	ALGEBRA, COMPUTER SKILLS, FLEXABILITY	NEAT, CASUAL	DATA PROCESSING, RUNNING COMPUTER PROGRAMS, DOING INVESTIGATIVE RESEARCH TASKS,HELPING PREPARE INSTRUMENTS FOR DEPLOYMENT IN THE FIELD, ANALYZING DATA, AND PREPARING DATA REPORTS MAY INVOLVE FIELDWORK AT SEA	1	16	BETH SEIDLE

DERM 111 NW 1 AVE MIAMI, FL 33128	BIOLOGIST ASST. BIOLOGICAL RESOURCES	8:30AM-4:30PM	CRAIG GROSSENBACHER 375-3312	DAVID ETTMAN 375-3303	ADVANCED SWIMMING SKILLS WILLING TO WORK OUTDOORS AND ON BOAT; INTEREST IN MARINE SCIENCE	DISCUSS W/ EMPLOYE R	ASSIST BIOLOGIST IN FIELD AND OFFICE, EXTENSIVE PHYSICAL ACTIVITIES, WORK CLOSELY WITH PROFESSIONAL STAFF	1	15	MARY GALANTER
DERM 111 NW 1 AVE MIAMI, FL 33128			BRIAN FLINN 372-6852	DAVID ETTMAN 375-3303				1	15	TRAVIS FARRELL
METRO DADE CO. PARKS AND REC. DEPT. OLD CUTLER HAMMOCK NATURE CENTER 17555 SW 79 AVE. MIAMI FL 33157	SUMMER CAMP COUNSELOR	VAR	BARBARA GOULDENER 255-4767		CPR AND FIRST AID CERT.;CANOE CERT. PREFER APPLICANTS WHO CAN WORK THROUGH 8/29	T-SHIRTS PROVIDED	ASSIST IN PROGRAMMING AND LEADING GROUP GAMES, ACTIVITIES AND LIVE ANIMAL PRESENTATIONS TO CHILDREN 4-6 OR 7-11	1-3	17	
NUCLEAR MARKETING AND SERVICES, INC. 7056 SW 44 ST MIAMI,FL 33155	CALIBRATION TECHNICIAN	8AM-4PM	YOSH EDWARDS 665-4769 EXT 102	FRANK GAVILA 665-4769 EXT 110	ALGEBRA, COMPUTERS; CHEMESTRY AND PHYSICS	CASUAL	ASSIST AIR SAMPLER PRODUCTION DEPARTMENT WITH CALIBRATION OF AIR SAMPLERS INCLUDING QC/QA DOCUMENTATION, CALIBRATION, INVENTORY OF PARTS, PACKAGING OF COMPLETED UNITS, AND OCCASIONAL ASSISTANCE WITH PRODUCTION	1	15	LONG HA
NUCLEAR MARKETING AND SERVICES, INC. 7056 SW 44 ST MIAMI,FL 33155	QUALITY CONTROL TECHNICIAN	8AM-4PM	JOHN ODOM 665-4769 EXT 100	FRANK GAVILA 665-4769 EXT 110	ALGEBRA, GEOMETRY, COMPUTER SKILLS	CASUAL	PERFORM QUALITY CONTROL MEASUREMENTS OF PRODUCTION COMPONENTS INCLUDING DOCUMENTATION, LABELING OF BOXES,INVENTORY OF STOCK AND ASSISTANCE IN WAREHOUSE MANAGEMENT	1	15	CLINTON NELSON
NUCLEAR MARKETING AND SERVICES, INC. 7056 SW 44 ST MIAMI,FL 33155	ENGINEERING ASSISTANT	8AM-4PM	JOHN ODOM 665-4769 EXT 100	FRANK GAVILA 665-4769 EXT 110	COMPUTERS, ALGEBRA 2, DRAFTING OR MECHANICAL DRAWING	CASUAL	ASSIST IN PREPARATION OF MECHANICAL DRAWINGS ON CAD SYSTEMS AND ASSIST IN ORGANIZATION OF DRAWING SYSTEMS. TASKS INCLUDE PERFORMANCE OF DIMENSIONAL MEASUREMENTS ON PRODUCTS OR COMPONENTS.	1	15	SANTIAGO RUIZ

APPENDIX C

MAST ACADEMY OUTREACH PROGRAM

MARINE & ENVIRONMENTAL SCIENCE INTERNSHIPS

ANNUAL CAREER FOLLOW-UP SURVEY

1993

PRELIMINARY REPORT

1993-94
MAST ACADEMY OUTREACH PROGRAM
ANNUAL CAREER FOLLOW-UP SURVEY REPORT
MARINE AND ENVIRONMENTAL INTERNSHIPS

OVERVIEW

A total of 28 senior high school students were placed in internship positions, ranging from research assistant to computer programmer. Of the 28 students, 16 were placed with University scientists or administrative staff. The interns were from 8 different high schools, and consisted of 3 Blacks, 11 Hispanics, 13 Whites, 1 Asian, 16 males and 12 females.

SUMMARY OF FINDINGS

Surveys indicate that as in previous years, the internship program once again has had its greatest impact on school performance; 83% of all interns surveyed indicated a positive effect on grades. A positive influence on attitudes towards science were reported by 86% of UM interns, and 79% of all interns.

As was the case last year, half of the students indicated their intention to enroll in additional science courses as a result of their experience. In addition, 63% of students are now planning a career in science. Over 60% of the UM interns indicated that their mentor has hd a significant impact on their career plans.

Half of the students have continued to have contact with their mentors since completing the program. Six UM interns, and 14 of the 24 interns surveyed have been offered part-time employment as a result of their internship contacts. Eleven of the students have indicated that mentors have provided assistance with student science fair progects; two MAST Academy participants have become district science fair winners, and will be entering their projects at the state level.

Of all eligible interns, 79% requested they be contacted to participate in the 1994 summer program. This included 90% of the UM interns.

1993-94
MAST ACADEMY OUTREACH PROGRAM
ANNUAL CAREER FOLLOW-UP SURVEY REPORT
MARINE AND ENVIRONMENTAL SCIENCE INTERNSHIP

These survey results were gathered from students participating in the 1993 summer internship program.

The survey included questions of two types. Questions A, J, and L were either general information or related to curriculum planning for class days. All other questions were intended to assess program impact on participating students. Results are tabulated on the chart below.

The data shown below reflects student response to questions assessing impact brought about by participation in the internship program. Two sets of data are supplied. One data column represents the student population funded through the University of Miami. The second column reflects all participating interns.

DATA

Question/Information	U.M. Interns
Number of surveys completed	14/16 (88%)
B. Were you planning a career in science before your internship?	
Yes	9/14 (64%)
No	5/14 (36%)
C. Are you now planning a career in science?	
Yes	8/14 (57%)
No	6/14 (43%)
D. Has there been continued contact with your mentor since last summer?	
Yes	6/14 (43%)
No	8/14 (57%)
E. Have these mentor contacts influenced your career choices?	
Yes	9/14 (64%)
No	5/14 (36%)

F. Have you been offered any additional opportunities as a result of these contacts?	
Job offers	4/14 (29%)
Support for college application	7/14 (50%)
Full-time employment	2/14 (14%)
Part-time employment	6/14 (43%)
Assistance with science fair projec	6/14 (43%)
G. As a result of the intern experience, have you participated in any of the activities listed below?	
1. Science/Environmental Clubs	
2. Hiking	3/14 (21%)
3. Canoeing	0/14 (0%)
4. Camping	8/14 (57%)
5. Snorkeling	1/14 (7%)
6. Scuba Diving	8/14 (57%)
7. Fishing	1/14 (7%)
8. Sailing	3/14 (21%)
9. Boating	3/14 (21%)
10. Swimming	7/14 (50%)
	7/14 (50%)
H. Has your internship experience positively influenced your progress in school in any way?	
1. Grades	12/14 (86%)
2. Conduct	10/14 (71%)
3. Attendance	11/14 (79%)
4. Attitude towards school	10/14 (71%)
5. Attitude towards science	12/14 (86%)
6. Attitude towards other subjects	9/14 (64%)
I. Have you taken or are you planning to take additional science courses as a result of your intern experiences?	
Yes	8/14 (57%)
No	6/14 (43%)
K. Has your interest in environmental issues changed as a result of your internship experience?	
Yes	9/14 (64%)
No	5/14 (36%)
L. Are you interested in participation next summer?	
No, I am graduating high school and am not eligible.	4/14 (29%)
Still eligible	10/14 (71%)
Yes, please contact me.	9/10 (90%)
No, I am not interested.	1/10 (10%)